THE ENGINEERING AND MINING JOURNAL.

VOL. XVI.—NO. 27.—FOURTH SERIES. NEW YORK, TUESDAY, DECEMBER 30, 1873. PRICE 10 CENTS PER COPY.

Fig. 1.
PILLAR SYSTEM.
Plan on plane of pitch in Main Seam at D. E. Fig. 2.

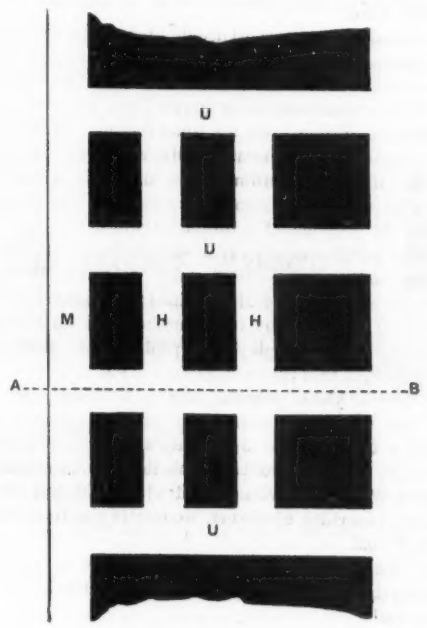


Fig. 3.
Crossworking Gobbing up System.
Plan at E. F.

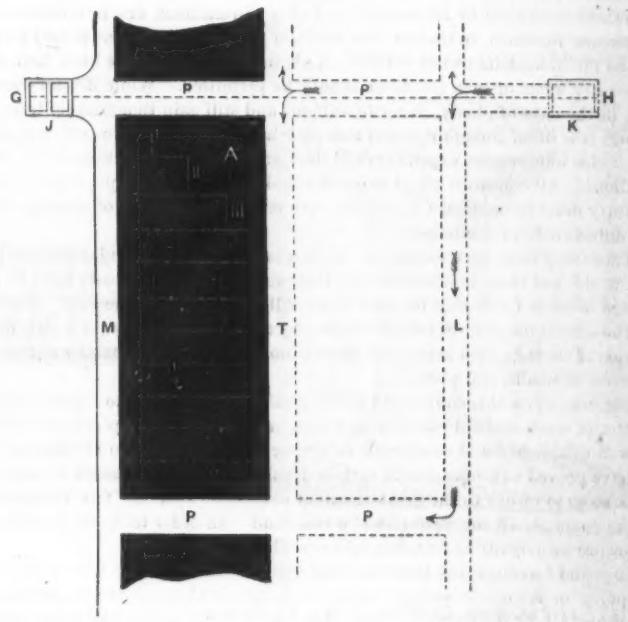


Fig. 2.
Vertical Section at A. B. Fig. 1.

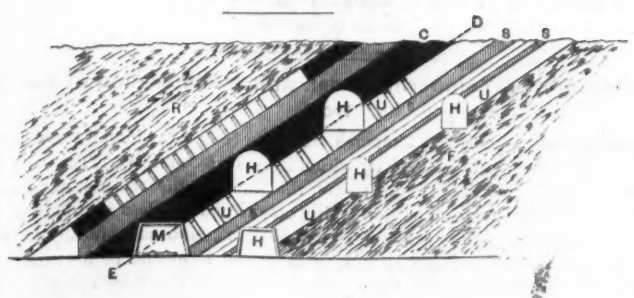
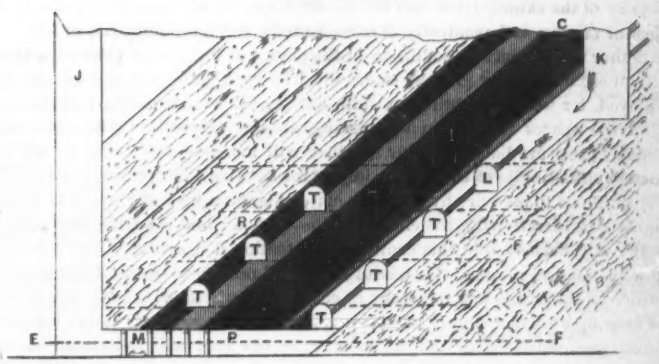


Fig. 4.
Vertical Section through G. H.



Scale 15 yards to an Inch.

DIAGRAMS ILLUSTRATING THE WORKING OF THICK SEAMS OF COAL.

Fig. 1. Working homewards by splitting main pillars into 9 pillars of smaller size. Ground plan on plane of pitch in main seam through DE.

Fig. 2. Vertical section through A.B. of Fig. 1, for one lift, 16 yards high. U, upsets; H, headings; M, main gangway; C, coal: S, slaty partings; R, roof; F, floor.

Fig. 3. Working homewards by crosswork and gobbing-up system. Plan through E. F. (Fig. 4), of pillar, indicating in dotted lines the communicadon with upper levels and shaft, used to deliver material from surface. M, main gangway; L, main top level for transportation of gob; T, headings, from which

the crosscuts are started; I. II. III., working faces; A, backings, to be gobbed up in rear of faces; P, crosscuts; J, main hoisting shaft; K, delivery shaft for material from surface. The arrows indicate the course of transportation.

Fig. 4. Vertical section through G. H., for one lift of 16 yards, divided into 4 sections, indicated by dotted lines. R, roof; F, floor. The arrows indicate the course of transportation.

What is the Best System for Working Thick Coal Seams?*

BY OSWALD J. HEINRICH, M. E., Superintendent of the Midlothian Collieries, Virginia.

THIS question having been repeatedly raised, and particularly revived in a discussion at the last meeting of the Institute, I beg to submit the following remarks, based partly upon personal experience, partly upon the results of large works in Europe, establishing, years ago, the practicability of certain methods, which may therefore be considered to have passed the stage of mere experiment.

Before entering upon the merits of one system or the other, it is indispensable to lay down some recognized principles, which ought to serve as guides, in arriving at fair judgments in questions of this character.

In a profession like that of mining, locally so much influenced by combinations of circumstances, too various to mention, it is difficult to do more than lay down the main features of a system based upon general laws and recognized facts, leaving the details to the sound judgment and experience of the engineer, who, by virtue of his education, ought to be able to make such choice and such modifications in the plans of a mine as the particular case demands.

Mineral resources, in some countries the sole property of the owner of the soil, in others controlled by the strong hand of a government, are nevertheless a gift of nature, in which, indirectly, the whole of the human race has as real an interest as the immediate owner himself. This interest requires, at least, that no unnecessary waste of such resources should be permitted. While it is an easy matter, in the days of plenty, to waste millions and still gain thousands of immediate profit, it is often enough the case that such a course may afterwards require the otherwise unnecessary expenditure of thousands to recover portions of the wasted millions. All countries afford more or less illustration of this principle; but this country must be confessed to occupy, with respect to the waste of mining, at least, an unfortunate pre-eminence.

There may have been excuse in years past for the use of ruder systems in the old world, but there is little for us. Hundreds of years of dearly bought experience in other lands may be used, if we will, as guide and warning. We ought to consider it the duty of our profession, by all rational means to resist the demands of short-sighted greed and false economy, tending to squander our national reserves of wealth and power.

Standing upon this simple and broad platform it becomes, to a great extent, a matter of mathematical calculation, which one of the various plans now followed in well established and conducted mines, or what combination of such methods as have proved advantageous in certain localities, shall be chosen in any given case, so as to utilize to the greatest extent consistent with the fair remuneration of the operator, all the resources of a coal-field. In order to do so, the following items are principally to be taken into consideration.

First and foremost, the thickness and pitch of the deposit; the extent of the property, or the circumscribed limits of a pit to be opened; the possibility of obtaining all, or the larger portion, of the marketable mineral; the conditions of the enclosing stratification; the hardness of roof and floor; the number of available seams and their distance from each other; the existing irregularities in the formation, as far as they are known; the quality and quantity of available materials for support, namely, timber, rock or other waste materials, and their cost, even for years ahead.

In connection with the prices of material used for support must be considered the price of the skilled labor and the market value of the mineral, which is the object of mining, independently of extraordinary and temporary rise or fall.

Another very important condition in the choice of the system is also the possibility of securing to the greatest extent the life, health and comfort of the men employed, for which a ventilation sufficient for all contingencies, and the security of the spaces where men are working, are indispensable. Where explosive or deadly gases are liable to occur, (as they will more or less occur in all coal mines,) ventilation is of the utmost importance. The influx of water and the liability of mines to take fire by spontaneous combustion, if badly worked, are also weighty considerations in the choice of the system; and the latter has unfortunately not yet received in this country the attention it deserves.

For economical reasons, it is advisable in coal mining to open out large spaces in order to obtain the coal generally in coarse grades, reduce the amount of slack and keep up a regular supply; but care should be taken not to leave too much ground open, since the air and the pressure of the roof will deteriorate certain qualities, at least, of coal, and in some mines will, in connection with other defects, give rise to spontaneous combustion.

Generally in coal seams the amount of waste rock obtained is far inferior to the amount of useful material to be excavated; and therefore other means must be supplied to protect the extensive openings, which, except in rare cases, cannot be left open, nor without support.

From past experience, taking every thing into consideration, the best systems for mining coal may be classified according to size and pitch of seam:

I. For seams of 10 feet thickness and less:

1. For the dip from 45° to vertical.
   - A. Overhand stoping. (*Exploitation par tailles à gradins renversés; Firstenbau.*)
   - B. Working by longitudinal pillars. (*Exploitation par serres longitudinales; Streichender Pfeilerbau.*)
2. For the dip from 45° to horizontal:
   - A. Pillar and chamber work. (*Exploitation par serres hautes et courtes; Kurzer und langer Pfeilerbau; Felderbau.*)
   - B. The long wall system. (*Exploitation par tailles grandes, droites et couchantes; Strebbau mit breitem Blick; Stossbau; Diagonaler Pfeilerbau.*)

II. For seams over 10 feet in thickness:

1. For the dip from 45° to vertical; working by crosscuts or benches, and "gobbing-up." (*Ouvrage à travers et par remblais; Querbau mit Bergversatz.*)
2. For the dip from 45° to horizontal, working by posts and stalls, pillar work with and without gobbing-up, or partially so. (*Exploitation par serres à methode par remblais; Pfeiler und Felderbau mit oder ohne Bergversatz.*)

There being little dispute in regard to the methods employed in working seams of medium size, we will here only consider the systems in use for mining thick coal-seams. The questions which must be particularly considered are two-fold, viz:

Can and should we extract all the coal in thick seams?

If we extract all the coal, how can the workings be supported? and, if necessary, the surface protected above the mines?

In answer to the first inquiry, we must admit that the entire seam ought to be extracted by all means, if it can be done at reasonable profit, and without violating the second conditions.

In answer to the second inquiry we must decide what, under the peculiar circumstances, will be the cheapest material to furnish the proper security for the mine, taking everything into consideration, whether the value of the coal left behind, or that of timber, or other material suitable for support, and the labor required for its application. All other conditions upon an equal footing, we may be justified in leaving coal behind for support, if the use of other materials exceeds in expense the value of this coal. If, on the contrary, those materials, particularly when intrinsically worthless, are cheaper, or even not greater in value than the excess of coal extracted, then, for reasons of national economy, we ought to avoid the irremediable loss to the public treasury involved in leaving coal behind.

From the experience of works now operating, we know, that even in thick seams, from 80 to 95 per cent. of the coal contained in the seam has been obtained under certain systems of working; by other methods, at least 60 per cent. has been averaged, while by others (employed on probably the most valuable coal, (Anthracite) we are informed that the average yield is but 35 to 40 per cent. of the whole mass. The largest yields above-named have been obtained, without injury to the mine, only where the system employed in working homewards was by cross-sections and gobbing-up, or by pannel-work with support of timber; but by the latter system, if the unavoidable gob left behind is liable to fire, the yield has been secured with the universal result of spontaneous combustion, injury to the surface and a sacrifice of timber, amounting to from ½ to 2 cu. ft. of timber for every ton of coal.

The lowest yield is obtained by pillar-work, leaving the entire pillars behind, or probably weakening them to some extent in working homewards, but losing also much of the top coal.

Taking therefore the first result as a standard, a given piece of land may yield a regular profit at a certain rate per ton for a number of years; the second method will yield the profit in round numbers for two-thirds, and the third for only one third of that time.

In similar proportion it will require an increased cost of production, or decreased profit, to redeem with interest any capital invested to develop the mine and erect the necessary machinery, buildings, etc., generally much reduced in value if they cannot be worn out upon the spot.

TO BE CONTINUED.

* A paper read before the American Institute of Mining Engineers, Oct. 22, 1873, at Easton, Pa.

New Method of Tempering Steel, and Regeneration of Burned Iron.

A PIECE of steel is generally tempered, and then re-heated more or less according to the hardness and the elasticity which it requires to receive. The dry temper, as commonly practiced, that is to say, the plunging the red-hot metal into cold water, has the drawback of developing cracks and crevices injurious to its tenacity. Re-heating does not remove these flaws; and subsequently on use these fissures, though invisible at first, increase and terminate in fractures. It has already been discovered that in order to escape from this danger it is preferable to temper the steel a little less hard, and afterwards to reheat more slightly. The author has succeeded in producing the combined effects of tempering and re-heating in one operation, and of removing as far as possible the chances of flaws. This is done by heating the water into which the red-hot metal is plunged to 55 deg. Tempering in hot, or even boiling water, modifies soft steel containing two to four-thousandths of carbon. This process augments its tenacity and elasticity without sensibly altering its softness. The texture is changed and becomes fibrous, even if previously crystalline. The author's method for restoring burned metal is likewise to plunge it at a red heat into a hot liquid. CARON.

THE COAL TRADE

NEW YORK, Dec. 27, 1873.

There is nothing new in the coal trade this week; the dealers are for the most part "spending Christmas," and nothing but the ordinary small orders are coming in, there being no effort made to extend business and no disposition to make contracts till after the holidays. The consolidation of the Lehigh Coal and Navigation Company's coal lands with those of the Honey Brook Company (the Central of New Jersey) and the Wilkesbarre Coal and Iron Company in one large operating company is still the question of most interest. The details will be arranged the coming week, and will then be given. The Lehigh Company sells its lands in the Wyoming Valley and leases its Lehigh lands, it is said, the consideration for the latter being a guarantee of 8 per cent. on the Company's stock.

From Buffalo our correspondent writes: Stocks here are very light, none, in fact, except the "combination," which has about 50,000 tons. Prices on cars are: Lump, $6.50; Grate, $6; Egg, $6.25; Stove, $6.50; Chestnut, $6.25 per net ton. F. O. B. prices are fifty cents higher, and retail $1.50 higher, delivered. Trade extremely dull.

The strike among the engineers on the Pennsylvania Railroad is likely to interrupt the shipments of Bituminous Coal, but the market is so dull that it will scarcely affect the prices, except the running of trains should be interrupted longer than is at all probable.

The Scranton sale of next week is exciting little interest, it being generally conceded that no material change will be *allowed* in the price.

Anthracite Coal Trade for 1872 and 1873.

The following table exhibits the quantity of Anthracite Coal passing over the following routes of transportation for the week ending Dec. 20, 1873, compared with the week ending Dec. 21, 1872.

COMPANIES.	1872. WEEK.	1872. TOTAL.	1873. WEEK.	1873. TOTAL.
Phila & Reading R.R†..	69,903	4,507,947	93,107	4,977,370
†Schuylkill Canal		849,473	4,534	754,557
‡Lehigh Valley R. R. ...	51,626	3,167,090	39,791	3,214,462
Lehigh & Sus. R. R.	41,359	1,663,240	50,413	1,997,641
" " Canal		767,694		756,252
Scranton North.....	12,600	785,888	12,576	906,203
" South	6 709	2,04,179	48,722	2,124,351
Penn. Coal Co., rail.....	19,688	1,191,789	20,490	1,215,952
" " " canal...	...	6 241	....	7 928
Del. Hud C. Co. Canal		1,34,041		2,368,622
" " East...	10,649	528,072	13,957	427,130
" " West...	8,861	416,137	8,309	570,316
" " South.	4,783	3 5 534	234	170 117
Shamokin.....	10,748	560,819	7,027	624,280
Treverton.....	...	....	....	....
Lykens Valley Coal Co...	....	....	....	....
Wyoming North.....	....	....	....	....
Wyoming South.....	....	....	....	....
P. N. Y. C. & R. R. Co..	11,994	615,552	9,449	715,007
Williamstown Col'y.....	....	.....	....	....
Big Lick Col...	....	.....	....	....
Total..	278,910	18,823,066	378 948	19,799,617
1872.....			278,910	18,823,066
Increase			30,038	976,551
Decrease.....				

These figures are for the week and fiscal period commencing Nov. 30.

† Tons coal transported for Company's use and Bituminous coal.

Bituminous Coal Trade, 1872 and 1873.

The following table exhibits the quantity of Bituminous Coal passing over the following routes of Transportation for the week ending Dec. 20, 1873, compared with week ending Dec. 21, 1872.

COMPANIES.	1872. Week.	1872. Year.	1873 Week.	1873 Year.
C. & O. Canal.....	....	612,537	604	641,166
B. & O. R. R.	23,168	1,235,081	21,429	1,053,045
Penn. S. Line..... ..	4,052	19,841	3,489	111,900
H. & B. T. R. R.....	9.269	301.974	8,975	449,990
*Harrisburg & D.....	4,785	451,490	5,032	326,705
*L. V. R. R....	....	27,060	....	28 410
P. & N.Y.C. & R. Co.....	6,372	352 290	4,309	338,827
Cumberl'd Branch Canal.	....	203,618	.	137,582
" Railroad....	....	26.070	1,102	88.407
Total.....	47,646	3,232,998	45,150	3.555,796
	45,150			3,232,998
Decrease.....	2,496			
Increase				322,798

Delaware and Hudson Canal Company.

Coal mined and forwarded by the Delaware and Hudson Canal Company for the week ending Saturday, Dec. 20, 1873.

	WEEK.	SEASON.
By Delaware and Hudson Canal.....		1,338,652
By Railroad, East.....	13,957	427,130
" West.....	8,309	570,316
" South..... ...	234	170,117
Total 1873.....	22,500	2,626,215
Corresponding time in 1872:		
By Delaware and Hudson Canal.....		1,394,041
By Railroad, East.....	10,649	528.072
" West.....	8,861	416,137
" South.....	4 783	375,534
Total.....	24,293	2,718,784
Decrease.....	187,568	

Philadelphia & Reading Railroad and Branches.

COAL TONNAGE

For the Week ending Saturday, Dec. 20, 1873.

BY RAILROAD—ANTHRACITE.

PASSING OVER MAIN LINE AND LEB. VAL. BRANCH.

	Tons. Cwt.
From St. Clair.	
" Port Carbon.	5,840 19
" Pottsville.	2, 52 00
" Schuylkill Haven.	57 6 6 11
" Pine Grove.	5,131 15
" Tamaqua.	19,001 13
" Harrisburg.	
" Dauphin.	2,512 14
Total	93,157 12

FOR SHIPMENT BY CANAL.

Passing Frackville Scales	.....
" Mill Creek "	267 19
" Schuylkill Valley Scales	.....
" Mt. Carbon	56 05
" Cressona "	2,632 16
" Pine Grove "	
" Tamaqua "	348 00
Total	3,304 00

SHIPPED WESTWARD VIA CATAWISSA AND WILLIAMSPORT BRANCH AND NORTHERN CENTRAL RAILROAD.

Via Catawissa & Williamsport Br.	232 13
" N. C. R. R. passing Locust Gap.	94 01
" " " Shamokin.	2,392 19
" " Herndon.	.....
Total	2,717 03

SHIPPED WEST OR SOUTH FROM PINE GROVE

Via Schuylkill & Susquehanna R. R.	1,862 00
" Lebanon & Pine Grove Branch	526 19
Total	2,389 08

CONSUMED ON LATERALS.

From Frackville Scales.	9 07
" Mill Creek "	327 08
" Schuylkill Valley Scales.	177 14
" Mt. Carbon "	1,024 07
" Cressona "	1,338 05
" Pine Grove "	41 03
" Tamaqua "	1,220 03
Total	4,148 04

LEHIGH AND WYOMING COAL.

Received via Silverbrook Junction, Sent East	11,437 12
Cat. & Wpt. Br. Sent West	.....
" " Rupert, Cat. & Wpt Br.	.....
" " Allentown R. Penn'a br.	5 19
" " Alburtis, " "	182 16
" " Oreland, G. & N. Br.	769 19
" " Willow Street R. R.	490 00
Total	12.885 16

BITUMINOUS.

From Harrisburg.	5,092 09
" Connecting R. R., G. & N. Br.	
" Junction R. R.	10 00
Total	5,092 09

COAL FOR COMPANY'S USE.

Anthracite	10,486 00
Bituminous	212 14
Total.	10,698 14

RECAPITULATION.

	Total for Week.	Corresp'g week last year.	Increase and Decrease.
Passing over Main Line and Leb. Val. Branch	93,107 12	69,903 08	i 23,204 04
For Shipment by Canal	3,304 00		i 3,304 00
Shipped Westward via Northern Central R. R.	2,717 03	5,626 13	d 2,909 10
Shipped West or South from Pine Grove	2,389 08	2,372 10	i 16 18
Consumed on Laterals	4 148 04	4,543 15	d 395 11
Lehigh and Wyoming Coal	12,885 16	5,945 12	i 6,939 04
Total Anthracite paying freig't	118,552 03	88,431 08	i 30,120 05
Bituminous	5,092 09	4,785 15	i 306 14
Total of all kinds paying freig't	123,644 12	93 217 13	i 30,426 19
Coal for Company's use	10,698 14	7 999 15	i 2,698 19
Total Tonnage for Week	134,343 06	101,217 08	i 33,125 18
Previously this year	186,502 02	199,141 04	d 12,939 02
Total to date	320,845 08	300,358 12	d 20,186 16

SHIPPED BY CANAL.

From Schuylkill Haven	3,450 10	.....	i 3,450 10
" Port Clinton	884 00		i 884 00
Total Tonnage per Week	4,334 10		i 4,334 10
Previously this year	6 3.7 06	6,594 00	266 14
Total to date	10,661 16	6,594 00	i 4,067 16

Report of Coal Transported over Central R.R. of N. J. (Lehigh and Susq. Div.)

Week ending Dec. 20—Compared with same time last year.

REGION SHIPPED FROM.	TIDE. tons ct.	LOCAL. tons ct.	CANAL. tons ct	TL WEEK tons cwt.	TL. DATE tons, cwt.
Wyoming	26949 11	11906 09		38856 00	1764354 00
Upper Lehigh		4681 13		4681 13	383772 08
Beaver Meadow	5123 04	5 33 16		10186 10	344647 09
Hazleton		110 13		110 14	2 7453 00
Mauch Chunk	267 17	12154 03		12422 00	517055 08
Total	32370 12	33846 04		66236 16	3017330 01
Prev'ly reported	1414563 00	922458 01	615572 04	2951203 05	
Total to date	1445133 12	956824 05	615572 04	3017330 01	
Same time 1872	1139132 04	871706 02	476748 16	2486468 02	
Increase	306001 08	85119 03	127943 08	519063 19	
Decrease					

DISTRIBUTION.	WEEK 1873.	WEEK 1872.	YEAR 1873	YEAR 1872.
Forwarded East by Rail to Tidal points	32370 12	24059 16	1445133 12	1139132 04
Forwarded East by Rail to Local points	16131 11	14978 14	432863 11	437836 05
Forwarded East by Rail use Central Division	1670 06	2057 15	87960 19	77440 02
Forwarded East by Rail use L. & S.	270 07	268 04	11660 12	8801 02
Delivered at and above Mauch Chunk	2101 03	1151 19	82907 16	59772 16
Delivered at Coalport & Hazard for Canal	6664 04		666549 11	532178 18
Delivered to L. V. R. R. at Packerton	1493 02	810 08	24029 16	15299 13
Delivered to L. V. R. Rd. at Sugar Notch	4139 14		104261 15	
Delivered to L. & B. R. R. at Plymouth Bridge	1395 19	5339 09	140142 09	227805 02
Total	64236 16	48661 05	3017330 01	2486468 02

Penn. and N. Y. R. R.—Coxton, Pa.

Coal tonnage for week ending Dec. 20, 1873.

	Week. Tons. Cwt.	Total. Tons. Cwt.
Anthracite received:		
From Lehigh Valley R. R.	8,678 13	27,655 18
" Lack. & B. R. R.	484 05	771 04
" Pleasant Valley R. R.	....	
" Sul. & Erie R. R.	385 17	1,205 14
Total	9,449 15	29,632 16
Same time last year	11,994 10	34,564 07
Increase	.....	.....
Decrease	2,545 15	4,931 11
Distributed:		
To Lehigh Valley R. R.		
To Lack. & B. R. R.		
To S. Central R. R	2.227 19	5,057 07
To Ithaca & A. R. R.	2,765 16	10,159 17
To Erie R. W. Pockets for shipm't.	2,226 16	7,977 16
To Erie Railway, Watkins direct.	758 05	1,599 08
To individuals on line of road	399 08	2,085 14
To points at & above Coxton for use of Co.	510 03	1,600 16
To points between Waverley and Elmira	560 08	1,151 14
Total	9,448 15	29,632 16
Bituminous received from BARCLAY R. R.		
Shipped north from Towanda	4,309 07	13,960 03
Shipped south from Towanda	....	91 13
Northern Central R. R.	....	
Total	4,309 07	13,960 03
Same time last year	6,372 07	16,105 09
Increase	....	
Decrease	2,063 00	2,145 06
Distributed:		
To Erie Railway	4,273 01	13,424 19
To So. Central R. R.	30 06	437 06
To Ithaca Valley R. R.	....	
Lehigh Valley, R. R.	....	74 11
To individuals on line of Railroad.	6 00	23 07
To points on line of road for use of Company	....	
Total	4,309 07	13,960 06
Grand totals transported:		
Anthracite	9,448 15	29,632 16
Bituminous	4,309 07	13,960 03
Total	13,758 02	43,592 19
Same time last year	18,363 17	50,669 16
Increase	.....	.....
Decrease	4,606 15	7,076 17

Report of Coal Transported over the Lehigh Canal

For the week ending Dec. 5, 1873.

REGIONS SHIPPED FROM.	TIDE. tons. ct.	LOCAL. tons, ct.	TL. WEEK tons cwt.	TL. DATE. tons, cwt.
Mauch Chunk Region.	192 00		192 00	206639 19
Mauch Chunk Region Hazardville				58,845 16
Beaver Meadow Region				131,534 15
Mahanoy Region		197 00	197 00	20,891 01
Hazleton Region		88 00	88 00	199,891 02
Upper Lehigh Region		93 00	93 00	29,267 04
Wyoming Region				114,269 07
Wyoming Region, Hazardville				4,282 09
Total,	192 00	380 00	572 00	736,251 13
Previously reported	260119 12	47550 01	735679 13	
Total to date	260311 12	475940 01	736251 03	
Corresponding week last year	257350 12	479723 12	767094 04	
Increase.				
Decrease	27039 00	3783 11	30,842 11	

DISTRIBUTION.	WEEK 1873.	WEEK 1872.	YEAR. 1873.	YEAR. 1872.
Consumed on line of Lehigh Canal	285 00		81,305 00	80,903 13
Passed into Morris Canal to Tidal Points			2,613 17	5,031 05
Passed into Morris Canal to Local Points			28,239 05	23,819 17
Passed into Del. & Rar. Canal to Tidal Points	192 00	193 03	257,797 15	287,289 07
Passed into Del & Rar. Canal to Local Points		95 13	13,506 01	14,898 09
Consumed on line Delaware Div. Canal		176 04	39,061 11	47,821 13
Passed through to Bristol	95 00	281 14	312,984 04	312,780 01
	572 00	746 14	736,251 13	767,094 04

Delaware and Hudson Canal Company.

Coal mined and forwarded by the Delaware and Hudson Canal Company for the week ending Saturday, Dec. 20, 1873.

	WEEK.	SEASON.
North	33,478 00	2,537,818 11
South	234 07	170,116 17
Total 1873	33,712 07	2,707,035 08
Corresponding time in 1872:		
North and South	54,106 14	2,881,406 11
Total Increase 1872	.....	.....
Total Decrease in 1873	20,394 07	179,471 09

Northern Central Railway, Shamokin Division.

Below is the return of Coal sent over the Shamokin Division of the N. C. R. W., for the 7 days ending Dec. 19, 1873.

	Tons	Cwt.
East	1,525 11	
West	6,301 09	7,827 00
Same time last year		10,748 01
Increase		.....
Decrease		2,921 01
Total amount shipped to date		624,280 01
Same time last year		560,819 10
Increase		63,460 11
Decrease		

Lykens Valley Coal Company.

Shipments of coal from Lykens Valley Coal Co., for week ending Dec. 22, 1873.

For week ending Dec. 19, 1873	1,008 13
Total shipment to date	.....

Delaware Lackawanna & Western Rail Road Company.

Coal transported on the Delaware, Lackawanna, & Western Railroad for the week ending Saturday, Dec. 20, 1873.

	WEEK. Tons. Cwt.	YEAR. Tons. Cwt.
Shipped North	13,576 07	916'803 14
Shipped South	48,722 09	2,1 3,350 18
Total	61,298 16	3,039,434 12
For the Corresponding time last Year:		
Shipped North	12,600 09	785,847 18
Shipped South	36,768 18	2,004,179 05
	49 309 08	2.790,067 08
Increase	11,989 08	249,367 09
Decrease		

Statement of Coal Transported over Cumberland and Pennsylvania Railroad

During the week ending Saturday Dec. 20, and during the year 1873, compared with the corresponding period of 1872.

WEEK.

	C. & O. C'l Tons. Cwt	B. & O. R. R. Tons. Cwt.	Pa. S. Line Tons. Cwt	Total. Tons. Cwt
1873	664 01	21 428 19	3,458 11	25 551 11
1872	.....	23,169 02	4,452 08	17,240 10
Increase	644 01			
Decrease		1,739 03	993 17	1,638 18

YEAR.

1873	641,830 10	463044 14	110,999 18	2,215,875 02
1872	612,536 18	1253080 14	19,871 10	1,847,489 03
Increase	29,293 12	227963 19	91,128 08	348,385 19
Decrease	....	....	....	....

Cumberland Branch R. R.

WEEK.

	To C. & O. Canal. Tons. Cwt.	To B. & O. R. R. Co. Tons. Cwt.	Total. Tons. Cwt.
1873	.....	1,191 19	1,191 19
1872	.....	.....	.....
Increase	.....	1,191 19	1,191 19
Decrease		.....	.....

YEAR.

1873	137,581 12	88,407 04	225,988 16
1872	203,617 16	26,080 16	229,697 12
Increase		62,327 08	
Decrease	66,036 04		3,708 16

Report of Coal Transported over Lehigh Valley Railroad

Report of coal tonnage for the week ending Dec. 20, 1873, with Totals to date, compared with same time last year.

WHERE SHIPPED FROM.	WEEK. Tons. Cwt.	TOTAL Tons. Cwt.
Total Wyoming	19,734 19	56,874 05
" Hazleton	13,032 08	27,309 07
" Upper Lehigh	499 09	7.6 03
" Beaver Meadow	8,5.3 1b	14,951 10
" Mahanoy	8,708 06	16,579 16
" Mauch Chunk	81 08	81 08
Total	50,570 03	111,301 19
Same time last year	60,682 02	187,927 07
Increase		
Decrease	10,111 19	76,625 10
Forwarded East from Mauch Chunk by rail	39,700 15	75,427 10
Same time last year	51,615 16	168 493 10
Increase	.....	.....
Decrease	11,925 01	93,296 00

DISTRIBUTED AS FOLLOWS.

Local East of Mauch Chunk	1,181 16	2,851 10
Forwarded East for use L. V. R.	1,290 04	2,8.2 19
Delivered to Furnaces and Manufacturing Companies	8,021 04	12,815 07
Delivered to Cat & Fog. R. R.	134 08	245 12
" " East Penn R. R.	44 16	218 02
" " North Pennsylvania Railroad	3,810 08	6,2.3 16
" " Port Del		
" " East' Amboy Railroad		
" " Morris and Essex Railroad	4,443 04	9,259 14
" " Bel Del Railroad	15,984 18	31,971 06
" " Central Railroad	4,989 17	9,352 15
Delivered at and above Mauch Chunk for use of L. V. R.R.	1,222 00	3,173 04
To P. & N. Y. R. R.	8,578 13	27,845 18
To Northern Central R. R.	443 16	2,797 11
To D. H. & W. R. R.	87 03	742 13
To L. & S. R. R. at Packerton for rail	114 06	226 16
To Individuals at Mauch Chunk	30 09	114 18
To Individuals above Mauch Chunk	283 01	1,041 09
To L. & S. R. R., at Penn Hav., for railroad Do. for canal		
To Lehigh Canal Mauch Chunk		102 00
To Catawissa Railroad	20 00	20 00
To L. & B. R. R. at Lack. June		
Total	50,560 03	111,301 19

Pennsylvania Coal Company.

Shipments of Pittston Coal for the week ending Dec. 20, 1873.

	1873. WEEK.	1873. YEAR.	1872. WEEK.	1872. YEAR.
By Railway	20,908 16	1,205,852 01	19,687 10	1,191,788 17
" Canal	.....	7,927 11	.....	6,240 18
Total	20,908 16	1,213,779 12	19,687 14	1,198,029 15
Increase, 1873	15,749 17			

Prices of Coal by the Cargo.

CORRECTED WEEKLY.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
Scranton Sales	....	4 85	4 99	5 30	5 44½	4 53
Lackawanna	5 25	5 35	5 45	5 60	5 90	5 25
Pittston	4 60	4 60	4 70	4 70	5 20	4 50
Wilkesbarre	5 05	5 15	5 25	5 40	5 70	5 05
Newport & Plymouth	....	....	5 35	5 50	5 80	5 10
Susquehanna Coal Co.	5 20	5 30	5 35	5 50	5 80	5 15
Lehigh Coals.						
Old Company	6 00	....	5 85	5 85	5 95	5 20
Sugar Loaf	6 00	....	5 85	5 85	5 90	5 20
Hazleton	5 85	....	5 70	5 70	5 85	5 15
Honey Brook	5 90	....	5 80	5 85	5 90	5 20
Spr'g Mount. Coal Co.	5 9	5 85	5 85	5 85	5 90	5 70
Beaver Meadow	6 00	....	5 85	5 85	5 95	5 20
McNeal	5 85	5 85	5 70	5 79	5 85	5 15
Schuylkill Coals.						
Schuylkill White Ash	4 60	4 60	4 70	4 70	5 00	3 95
" Red Ash	...	....	4 70	4 85	5 15	3 95
Shamokin W. & R. Ash	....	....	4 85	5 00	5 20	4 10
North Franklin	....	....	5 20	5 20	5 10	4 00
Lorberry	....	....	5 50	5 50	5 50	4 35
Lykens Valley	....	....	....	6 10	6 10	4 75

Prices at Baltimore—Dec. 1873.

Wholesale Prices to Trade.

Wilkesbarre, by cars	$6 25@....
Pittston and Plymouth, do	6 00@....
Shamokin Red or White Ash, do	6 00@5 25
*Lykens Valley Red Ash, do	@5 80
By retail, all kinds per ton of 2,240 lbs	7 50@8 50
*George's Creek and Cumberland f. o. b. at Locust Point for cargoes	4 85@5 00
West Va. Gas Coal	6 50@7 50
Youghigheny gas f. o. b. at L. Point, nominal	7 50
Kanawha Cannel, coarse	13 00

* Freight to New York $2 15.

BITUMINOUS COALS.

Kittaning Coal Co.'s Phœnix Vein, f. o. b. at Phila	$
Lemon " " "	
Cumberland Vein Coal	
Tyreonnel f. o. b.	$7 25

Prices at Georgetown, D.C., and Alexandria, Va.

Dec. 1873.

George's Creek and Cumberland f. o. b. for shipping $4 60@4 75

Prices at Havre de Grace, Md.

Dec. 1873.

Wilkesbarre and other White Ash for Cargoes	$....@....
Lykens Valley	....@....
Shamokin Red or White Ash	....@....

Navigation suspended for the season at this port.

Bituminous Coals (Cumberland).

Georgetown, f. o. b.	$4 60@4 75
Baltimore "	5 10
New York "	—@7 25
South Amboy	7 00

Prices of Foreign Coals.

Dec. 1873.

Duty 75 c. per ton.

Corrected weekly by ALFRED PARMELE, No. 32 Pine street, N. Y.

Liverpool Gas Caking	16 00@18 00
" " Cannel	13 00@18 00
" House	20 00@21 00
" Orrel	20 00@— —

Per ton 2,240 lbs. ex-ship.

PRICES FROM YARD.

Liverpool House Orrel, screened	$20 00@22 00
" Cannel, "	22 00@25 00

Per ton 2.000 lbs. delivered.

Prices of Gas Coals.

Dec. 1873.

PROVINCIAL.

Corrected weekly by Louis J. Belloni, Jr., 41-43 Pine st., N. Y

	Coarse Slack. Currency.	
Rock House, f. o. b. at Cow Bay	$2 50	$1 25
Gowrie	2 25	0 00

Corrected by Bird, Perkins & Job, 27 South street.

	Coarse. Currency.	Culm of Coal. Currency.
Pictou	$3 00	1 50
Sydney	3 25	1 00
Lingan	2 75	1 00
Caledonia	2 75	1 25

A discount from the prices of the coarse Coal on purchase of 5000 tons and upwards. Duty on all slack coal or Culm: 40c. per ton of 28 bushels, 80 pounds to the bushel. On all bituminous coal or shale: 75 cents per ton of 28 bushels.

AMERICAN.	Nominal qu. Currency.
Westmoreland f. o. b.	$7 00 @9 00
Fairmount Gas Coal Co. of N. Y.	6 50 @7 00
Despard Coal Co.	6 50 @7 50
Penn.	6 50 @7 00
Newburg Orrel Gas	6 50 @7 00
West Fairmount Gas Coal	6 50 @7 00
Redbank Cannel, at Pa	12 00 @0 00
AT PHILADELPHIA	
Westmoreland	7 50 @0 00

Rates of Transportation to Tide Water.

BY RAILROAD.

TO PORT RICHMOND, PHILADELPHIA.

Philadelphia and Reading Railroad, from Schuylkill Haven. Lump and St., net, $1 60; Br., Egg and Ch., $1 65; Stove, $1 75 Shipping at Pt. R., 20c., for use at Phil., $2 18 from Pt. Carbon.

MAUCH CHUNK TO ELIZABETHPORT.

L. V. Railroad from Mauch Chunk to Phillipsburgh	$0 72
C. R. R., N. J., Phillipsburgh to Elizabethport	06
Shipping expenses at Elizabethport	25
Wharfage	10
Total	$2 23

MAUCH CHUNK TO PORT JOHNSTON.

L. V. R.R., or L. & S. R.R. from M. C. to Phillipsb'g	$0 72
C. R. R., of N. J., Phillipsburgh to Pt. Johnson	1 18
Shipping expenses	25
Wharfage	10
Total	$2 23

TO HOBOKEN

L. V. R. R., Mauch Chunk to Phillipsburgh	72
Morris & Essex R. R. Phillipsburgh to Hoboken	"
Shipping expenses	25
Wharfage	50
Total	$2 23

TO SOUTH AMBOY.

L. V. R. R.	84
R. & D. R. R.	1 06
Cam. & Am. R. R.	
Shipping Expenses	35
Total	$2 23

PENN HAVEN TO ELIZABETHPORT.

L. V. R R. Penn Haven to Phillipsburgh	84
C. R.R. of N. J. Phillipsburgh to Elizabethport	1 06
Shipping expenses	15
Wharfage	20
Total	$2 25

Freights.—Dec. 1873.

TO EASTERN PORTS.	Cumberland. From Georgetown.	Cumberland. From Baltimore	Anthracite. From Elizabethport, Port Johnston, Weehawken, and Hoboken.	Anthracite. From Newburgh.	Anthracite. From Rondout.
Amesbury			2 10	2 10	
Bangor					
Bath		2 75			
Boston		2 50	2 15*	2 15	
Bridgeport		2 25	90	90	
Bristol			1 30	1 30	
Cohasset Narrows					
Derby					
Dighton					
East Cambridge			2 25	2 25	
Fall River		2 35	1 25	1 25	
Hackensack					
Hartford			Ice.	Ice.	
Hoboken			45	45	
Jersey City			45	45	
Lynn					
Middletown					
Mystic					
New Bedford			1 35	1 35	
Newburyport			2 40	2 40	
New Haven			90	90	
New London			1 10	1 10	
Newport			1 25	1 25	
New York			45	45	
Norwalk			90	90	
Norwich			1 15	1 15	
Pawtucket			1 35†	1 35*	
Portland			2 40	2 06	
Portsmouth, N.H			2 35	2 35	
Providence			1 25	1 25	
Rockport					
Saco					
Sag Harbor			1 10	1 10	
Salem			2 15	2 15	
Stamford			90	90	
Stonington			1 25	1 25	
Taunton					
Warren			1 25	1 25	
TO RIVER PORTS					
Albany					
Catskill					
Cockaackie					
Coeyman's					
Cold Spring					
Fishkill					
Haverstraw					
Hudson					
New York vessels					
Nyack					
Poughkeepsie					
Rhinebeck					
Rondout					
Saugerties					
Sing Sing					
Stuyvesant					
Tarrytown					
Troy					
West Point					
Yonkers					

Canal closed for the Season.

* 3 c. per bridge per ton in addition to freight.
† New Haven rate and towing 25 c. extra per ton
‡ Towing from Providence and return, extra.
‖ And Towing.

St. Thomas	$— — Gold
Martinique	— — "
Demerara	— — "
New Orleans	— — "
Mobile	— — "

Foreign and Provincial Freight

Dec. 1873.

Foreign.

Newcastle and Ports on Tyne, per keel of 21 1-3 tons £
Liverpool, 5 per cent primage

TO NEW YORK.

Provincial

Sydney	
Lingan	$5 00
Cow Bay	4 00
Port Caledonia	4 00
Little Glace Bay	4 00

TO BOSTON.

Sydney	3 50
Lingan	3 50
Cow Bay	3 50
Port Caledonia	3 50
Little Glace Bay	3 50

TO MONTREAL.

Caledonia	3 75 gold.

TO CUBA.

Caledonia	9 50 gold.

MARKET REVIEW.

NEW YORK, Dec. 26, 1873.

IRON—Scotch Pig is very quiet, prices are nominal, and there are no new features of interest to note; buyers continue to purchase to meet their limited wants; trade in large parcels is suspended for the present; the latest quotations from Glasgow are 112s. for Glengarnock, 109s. for Eglinton, 114s. for Gartsherrie, and 112s. 6d. for Langloan; 500 tons Eglinton, and 200 do. Glengarnock, just to hand, was sold previous to arrival. American Pig is steady, and prices tend upward; there has been some

further sales of Lehigh brands, but particulars are withheld; we understand $35 is freely offered for No. 1 Allentown, but refused, while some of the companies are asking $37 for No. 1; 800 tons No. 1 Lehigh, sold on private terms. Rails are quiet, and without movement of note; $40 is a fair quotation of old T. while D. H., are not offered. Scrap moves slowly. Refined Bar, &c., from store is rather stronger, manufacturers being rather firmer than for some time past, though there has been no advance.

COPPER—New Sheathing is steady at 33 cents, and Bolts and Braziers 35, Bronze and Yellow Metal Sheathing 26, and Y, M. Bolts 32, net cash. Ingot has sold more freely, and prices are rather firmer; the transactions embrace 200,000 lb. at 24@24¼ cents for Lake; 50,000 lb. Baltimore, 24¼@24¼; and 3@400,000 lb. Lake, January and February delivery, 25.

LEAD—Pig is still very quiet; we quote ordinary Foreign 6¼@6¾ cents, and Domestic 6@6½ gold. Bar 9¼ cents, Sheet and Pipe 10½, and Tin-lined Pipe 16½, less 10 per cent. to the Trade.

SPELTER—Remains dull, and prices are nominally as before, Domestic being held at say 10 cents currency, and Foreign 7 cents gold.

REGULUS ANTIMONY—Sales in small lots at 12¼ cents gold.

TIN—The demand for Pig has been pretty active, and sales have been made of 750 slabs Staits at 28¼@28½ cents; 600 do., to arrive from Boston, 28; 300 do. Malacca, to arrive, 28; five tons English L. & F., to arrive, 26¼; and 700 slabs Straits, to arrive at a private price. The closing quotations were—Straits 28¼@28½ cents, English L. & F. 26¼@26½, English Refined 27½@27¾, and Banca 32, all gold. Plates have become quiet; prices, however, are firm, stocks are light, and the outlook is favorable to holders. We have only to notice the sales of 350 bxs. Charcoal Terne at $9.75 gold.

ZINC—Mosselmann Sheet is quiet at old prices. Manganese black oxide 3¼ cents currency, do. gray peroxide 7 cents.

The steel manufacturers consume at present much Manganese, generally of low grade, like that from Virginia and Georgia, but mostly make use of the imported Speigel Iron, containing 20 per cent. and a full supply is now in market.

METALS.

NEW YORK, Dec. 26, 1873.

IRON.—Duty: Bars, 1 to 1¼ cents ₩ lb; Railroad, 70 cents ₩ 100 lbs.; Boiler and Plate, 1¼ cents ₩ lb; Sheet, Band, Hoop, and Scroll, 1¼ to 1¾ cents ₩ lb; Pig, $7 ₩ ton; Polished Sheet, 3 cts. ₩ lb; Galvanized 2½; Scrap Cast, $6; Scrap Wrought, $8 per ton. All less 10 per cent. No Bar Iron to pay a less duty than 35 per cent. ad val.

	Store Prices.
Pig, Scotch—Coltness ₩ ton	45 00@— —
Gartsherrie	—@47 00
Glengarnock	42 —@44 50
Eglinton	41 —@42 —
Pig, American, No. 1	34 00@35 00
Pig, American, No. 2	31 00@33 00
Pig, American, Forge	27 00@30 —
Bar Refined, English and American	— —@— —
Bar Swedes, assorted sizes (gold	—@137 50
	Store Prices, cash.
Bar Swedes, ordinary sizes	162 50@— —
Bar, Swedes, Flow sizes	172 50@— —
Bar, Refined, ⅜ to 2 in. rd. & sq. 1 to 6 in. x ⅜ to 1 in.	75 00@— —
Bar, Refined, 1¼ to 6 by ¼	80 00@— —
Bar, Refined, 1 & 1¼ by ¼ & 5-16 in	90 00@— —
Large Rounds	80 00@100 00
Scroll	100 00@135 00
Ovals and half-round	100 00@115 00
Band	95 00@— —
Horse Shoe	107 50@110 —
Rods, ⅜ to 3-16inch	80 00@130 00
Hoop	110 00@153 00
Nailrod	9 @ 9½
Sheet, Russia, as to assortment (gold)	17 @ 17½
Sheet, Singles, D. and T. Common	—4½@— 5¾
Sheet, D. and T. Charcoal	—6¾@— 8
Sheet, Galv'd, first 10 per cent, discount	— —@— —
Rails, English (gold), ₩ ton	56 —@60 —
Rails, American, at Works in Pennsylvania, currency	65 —@— —

COPPER.—Duty: Pig, Bar, and Ingot, 5; old Copper 4 cents ₩ lb; Manufactured, 45 per cent. ad val.

	All Cash.
Copper, New Sheathing, ₩ lb	— @— 33
Copper Bolts	— @— 35
Copper Braziers, 16oz. and over	— @— 35
Copper Nails	— @— 40
Copper, Old Sheathing, &c. mixed lots	20 @— 23
Copper, Old, for chemical purposes, 14@16 oz	— @— —
Copper, American Ingot, Cash	21 @— 74¼
Copper English Pig	— @— —
Yellow Metal, New Sheathing & Bronze	— @— 26
Yellow Metal Bolts	32 @— —
Yellow Metal Nails, Sheathing and Slat'g	— @— 28

LEAD.—Duty: Pig, $2 ₩ 100 lbs.; old Lead, 1½ cents ₩ lb Pipe and Sheet, 2½ cents ₩ lb.

Spanish (gold)	6 75 @6 87½
German, do.	6 75 @6 87½
English do.	6 87½@7 00
Foreign, Refined	7 25 @7 50
Domestic do.	6 00 @6 12½
Bar (net)	9 25 @— —
Pipe (net)	— —@10 50
Sheet	— —@10 50

STEEL.—Duty: Bars and Ingots, valued at 7 cents ₩ lb or under 2½ cents; over 7 cents and not above 11, 3 cents ₩ lb; over 11 cents, 3½ cents ₩ lb, and 10 ₩ cent ad val. Store prices.

English Cast (2d and 1st quality) ₩ lb	— 17 @— 21
English Spring (2d and 1st quality)	— 9½@— 10½
English Blister (2d and 1st quality)	— 14 @— 18½
English Machinery	— 14½@— —
English German (2d an 1st quality)	— 12½@— 14½
American Blister "Black Diamond"	— — @— 11½
American, Cast, Tool do.	— — @— 17
American, Spring, do.	— — @— 11
American Machinery do.	— 11½@— 12
American German, do	— 9 @— —

TIN.—Duty: Pig, Bars, and Blocks, 15 ₩ cent. ad val.; Plate and Sheets and Terne Plates, 25 ₩ cent.; Roofing 25, ad val.

	Gold ₩ lb.
Banca	32 @—
Straits	28¼@28½
English	28 @28⅝
English Refined Gold	27½@27¾

PLATES. Pair to Good Brands.	Gold.	Currency
I. C. Charcoal, ₩ box	$10 25 @10 53	$11 50 @12 00
I. C. Coke	8 25 @ 9 25	9 37½@10 37½
Coke Terne	6 75 @ 8 50	7 25 @ 9 50
Charcoal Terne	9 25 @ 9 75	10 25 @11 00

SPELTER—Duty: In Pigs, Bars & Plates, $1.50 ₩ 100 lb

Plates, Foreign (gold) p. 100 lb.	7 37½@— 7 62½
Plates, Domestic p. lb.	— @—11

ZINC—Duty: Pig or Block, $1.50 per 100 lb.; Sheet 2½c per lb

Sheet	per lb.—8¾ @ —

San Francisco Stock Market.

BY TELEGRAPH.

NEW YORK, Dec. 26, 1873.

The following report from the San Francisco Stock Board is dated the 23d inst. Raymond & Ely is the only exception to an advance of the list.

Savage	—	—	98
Crown Point	—	—	103
Yellow Jacket	—	—	88
Kentuck, "New Issue"	—	—	70
Chollar Potosi	—	—	73
Gould & Curry "New Issue"	—	—	26
Belcher "New Issue"	—	—	100
Imperial	—	—	7¼
Raymond & Ely	—	—	46⅜
Meadow Valley	—	—	13½
Eureka C. V.	—	—	17½
Ophir	—	—	—
Hale and Norcross	—	—	—

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. The ENGINEERING AND MINING JOURNAL, which is the Organ of the Institute, and contains its proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues are payable in advance at the annual (May) meeting. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

THOMAS M. DROWN, Secretary.

1123 Girard street, Philadelphia, Pa.

121st Auction Sale.
70,000
TONS SCRANTON COAL.

On WEDNESDAY, DEC. 31st, 1873.

NEW YORK, Dec. 24, 1873.

The Delaware, Lackawanna and Western Railroad Company will sell, by MESSRS. JOHN H. DRAPER & CO., Auctioneers, at the Company's Sales Room, 26 EXCHANGE PLACE, corner of William Street, NEW YORK, on WEDNESDAY, Dec. 31st, at 12 o'clock, noon,

70,000 TONS

OF

COAL, FROM THE LACKAWANNA REGIONS,

of the usual sizes, deliverable at the option of the Company at their Coal Docks either at Hoboken or Elizabethport during the month of January, 1874.

The sale will be positive; each lot put up will be sold to the highest bidder; no bids, in any form whatever, being made for account of, or on behalf of the Company. The conditions will be fully made known at the time of sale.

TERMS: FIFTY CENTS PER TON, payable in current funds, on the day of sale, and the balance, within ten days thereafter, at the office of the Company.

SAMUEL SLOAN, President.

TO SULPHURIC ACID MANUFACTURERS.

FOR SALE:—Copper Pyrites containing 47 per cent. sulphur; either lump or granular, in any quantity required.

DYE & CURTISS,
Dec. 30;3mo 508 Sixth Avenue, New York.

J. W. HARDEN & SON,

MINING ENGINEERS,

430 *Walnut Street, Philadelphia.*

Coal and Iron Ore properties reconnoitred and reported on. General plans, Working drawing and Estimates of Mining structures and Machinery supplied. Periodical underground Surveys made and kept up. Geological and Geographical Surveys made. Aprit 22.1y

MISCELLANEOUS.

J. W. PATTEN & CO.,

DEALERS IN

ENGINEERS' AND MINERS'

SUPPLIES,

Machinery, Steam Pumps, &c.,

No. 109 Market Street,

WILKES-BARRE, PA.

SOLE AGENTS FOR "HALL'S SAFES."

Dec. 23-4t

H INRICHS.

31 PARK PLACE, (up stairs.

CORNER OF CHURCH ST., OVER STARCH WAREHOUSE

Has now ready his 73rd annual display of

Holiday Fancy Goods,

TOYS,
BRONZES,
CLOCKS,
PARRIAN, LAVA,
MAJOLICA,
BOHEMIAN AND BELGIAN GLASS.

FANCY AND TABLE CHINA, &c.

and respectfully invites his customers and the public generally to favor him with a call.

Assortment Large and Prices Moderate, to Suit the times.

dec2—3t

THE IRONMASTERS' LABORATORY.—Exclusively for the Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestone, Clays, Slags & Coal for Practical Metal lurgical Purposes. No. 339 Walnut Street, Philadelphia.
J. BLODGET BRITTON.

This Laboratory was established in 1866, at the instance of a number of practical Ironmasters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

CHARGES TO IRON WORKS.

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THE ENGINEERING AND MINING JOURNAL.

ROSSITER W. RAYMOND, Ph. D.
JOHN A. CHURCH, E. M. Editors.

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THE ENGINEERING AND MINING JOURNAL *is projected in the intent of furthering the best interests of the Engineering and Mining public, by giving wide circulation to original special contributions from the pens of the ablest men in the professions. The careful illustration of new machinery and engineering structures, together with a summary of mining news and market reports, will form a prominent feature of the publication.* It is the Organ of the American Institute of Mining Engineers, and is regularly received and read *by all the members and associates* of that large and powerful society, *the only one of the kind in this country.* It is therefore the best medium for advertising all kinds of machinery, tools and materials used by Engineers or their employees.

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The Postage on THE ENGINEERING AND MINING JOURNAL *is twenty cents a year, payable quarterly in advance, at the office where received.*

THE SCIENTIFIC PUBLISHING COMPANY.

WILLIAM VENTZ, SECRETARY.
27 Park Place,
NEW YORK CITY.

P. O. Box 4404.

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WE are limited in available space this week by the publication of the Index to our sixteenth volume, which closes with our present number. Whoever is disappointed at the comparative brevity of our ordinary reading matter, is advised in a friendly way, to spend a little while in contemplating the array of instructive and attractive information indicated by the Index of which he may feel at first inclined to complain. The retrospect will fill his mind with thoughts appropriate to the season. Dearly beloved subscriber, permit us to suggest a few of those timely meditations.

1. If I have read all that, how much I know!
2. If I haven't read all that, how much I ought to know, and don't!
3. What can I do to testify my gratitude to the kind friends who have, for the minute consideration of $4 per annum, taken so much pains to enlighten, entertain, advise, console, protect and favor me?
4. I can remit, instead of omitting, the said $4.
5. I can renew my subscription and pay in advance.
6. I can get JONES to subscribe also—and remit his $4 in the same surprising manner.
7. I WILL!

A good many of you, without any exhortation from us, have formed and acted upon most of these resolutions already; but there is that thought about JONES—you have forgotten JONES.

If you keep these things in mind, and do them, you will certainly be blest—for we will bless you. If you despise and neglect them—but we will not pursue the horrid inquiry, what will then become of you (and of us). No; we will rather, in a confidence born of long experience, wish you a Happy New Year, and congratulate ourselves upon the good things we have in store for you, without fearing that you will forsake our company before "the refreshments are handed round."

We need not repeat the announcements recently made with regard to our coming volume. Mr. ROTHWELL has perfected his arrangements for a more thorough representation of the coal and iron interests than has ever yet been secured; and the fruits of his skill and experience, supplemented by a large corps of local correspondents, will speedily appear. Meanwhile, there will be no relaxation of industry in any other part of the paper, and we look forward with a settled assurance to an increased measure of that success and influence which it has been hitherto our good fortune by patient labor to achieve.

BY an oversight, the article on Lake Champlain Furnaces in our last was printed without credit to the New York *Times*. We are the more anxious to correct the error, as that paper deserves great credit for the pains it has taken to send correspondents into the manufacturing regions, or engage competent men to supply information from the districts they are acquainted with. It is difficult for an ordinary correspondent to comprehend the workings of a business which is entirely new to him, and it is difficult for a daily paper to print with accuracy accounts of technical work, or even descriptions of a technical trade. But, with the exception of errors due to these causes, the letters in the *Times* have been praiseworthy efforts to make the people acquainted, to some extent, with those manufacturing and mining resources which are daily increasing in importance.

THE Mississippi river was completely spanned at St. Louis on the 18th instant by the laying of the last tubes in the center span of the Eastern arch. A party of ladies and gentlemen walked out at noon and raised the American flag on the middle tower. Of course a great deal of work remains to be done, and the bridge will not be finished and open to traffic before the Fourth of July next. This great work will have the happiest influence upon the fortunes of St. Louis, and upon the comfort of travellers, if not upon the course of travel. As an engineering exploit, it will always be the study of bridge builders, and will probably remain unique. Although employing one of the oldest modes of spanning a ravine—the arch—it is in every detail original and peculiar. Not only is its material novel, but it is the only example of a great bridge composed entirely of engine work. We do not say that this is an excellence; on the contrary, the very fact that a given design requires the employment of the most accurate machinery for the shaping of each piece is alone almost enough to condemn it. But it is still a fact that the St. Louis bridge is a magnificent specimen of accurate machine work.

THE *Nation*, which never professed any special knowledge of mining matters, has made an exception of the Emma mine in Utah, the sale of which it is never weary of denouncing as a swindle, from beginning to end. We pointed out last June that this wholesale and reckless style of criticism was neither justified by the facts nor calculated to impress the public. We have repeatedly reviewed, from a really independent standpoint, the history and management of the Emma, laying the blame where, in our opinion, it belonged. The *Nation* now adopts as its own a notoriously partisan and one-sided pamphlet, issued for a speculative purpose and compounded of garbled truths and lies. The effect will be to throw upon the *Nation* the worst suspicion that can attach to a critical journal, namely, the suspicion that it allows its columns to be used by interested parties, to further the ends of private gain, or personal or political revenge.

WE publish this week the first half of the very timely and practical paper of Mr. HEINRICH, read before the Institute of Mining Engineers at Easton. No remarks of ours will be needed, to secure for this paper the attention it deserves, or to make plain its merits as a valuable contribution to an important discussion.

The English Mining Market.

THE tremendous changes in the cost of such raw materials as coal and iron is producing in the English markets a state of things which very closely parallels that period of excited investment which occurred ten years ago in our country, and was due to the war. Old owners of mines and collieries are quietly "retiring from the cares of such extensive undertakings," and stock companies are taking their place. Of course the transfer is made on the basis of the new prices and the properties bring very large sums. The famous Oaks collieries have been sold to the well known proprietors of the Cyclops Works, Sheffield, Messrs. CAMMELL & Co., at the price of £240,000. The property comprises 1200 acres of the well known 9-foot Silkstone coal seam, and is estimated to yield 10,000 tons per acre. Messrs. CAMMELL will now put up blast furnaces, and thus round up their already exceedingly comprehensive works. But this sale sinks into insignificance by the side of that made by the firm of ANDREW KNOWLES & SONS, who, for the consideration of £1,250,000, have parted with colliery property which has been in their firm for more than eighty years, and which has produced for several years no less than 950,000 tons of coal a year. Transactions of this kind are indications of no small importance. It is perfectly true that the Messrs. KNOWLES may have abandoned their well established business simply because it was onerous, but it is much more likely that they look upon the high prices of the present day as a transitory phenomenon. If those gentlemen believe that the present price of coal is to be permanent, it is hardly possible that they can look upon even a million and a quarter of pounds sterling as fairly representing the value of mines that yield close on a million tons a year. Certainly this transaction, and many others like it, must be regarded as a sign that the most experienced men in the English coal trade are looking for a marked reduction of the present rates before very long. A partial reduction of prices was reported in these columns last week, and sales like this point to the probability of its repetition. We do not look upon such transactions as favorable to trade, as a whole. The properties pass at rather extravagantly estimated values out of the hands of men who are thoroughly accustomed to their management, and into the care of those who are strange to the business. The new directors have a more difficult task than the old ones, and are more exposed to disaster from the ordinary hazards of business. In this country the sale of business interests at inflated values proved disastrous in a great number of cases; and England, after the passage of the Limited Liability Act, only a few years ago, underwent a precisely

similar experience, and of the companies formed a large proportion were failures.

The present excitement and tendency of property holders to "unload," is confined mostly to mine owners; for while the producers of raw material are showing, both by their current profits and by their readiness to sell the finest properties, that times are exceedingly good with them, the manufacturers who use their raw material are in just the opposite condition. Iron works, in particular, seem to have suffered heavily from the unusual circumstances of the last twelve or eighteen months. The celebrated Nant-y-Glo and Blaina Iron Works Company, for instance, have just completed a year in which a loss of no less than £29,221 was suffered. This deficiency is the more remarkable when it is considered that, in the previous year, there was a *profit* of £61,000—a difference in twelve months of $450,000. The loss was explained by the fact that the three months' strike early in the year cost the company probably £60,000; that wages have been raised no less than *four* times, and to the amount of 10 per cent. each time or a little more than 43 per cent. in all, and that profits have not increased in proportion to wages. The case of the Blaina Company, though the most conspicuous, is not the only example of profitless work, but others are constantly reported.

Absentee Management of Mines.

WE refer in another place to the fact that the celebrated Nant-y-Glo Iron Works have suffered pretty heavily in the operations of the past year. The disaster is attributed to the bad management on the part of the Company's Directors. This company includes no less than 1350 shareholders, very largely composed, according to one gentleman, of clergymen and ladies. One of the establishments owned by the company was calculated to produce yearly 52,000 tons of pig iron, and 46,800 tons of finished iron; it owned its own coal mines and was apparently in a position to command a reasonable profit. But in one year there was a difference in the net returns of no less than £90,000, and a loss of nearly £30,000, though the works have for years produced large profits.

The causes of this bad fortune are attributed by our foreign exchanges to bad management on the part of the Directors, and we bring the case forward because our English friends can find in it an exact parallel to the conditions which obtain in most American mines, which are owned and managed in London. With a capital of one million, the business of the year amounted to only £429,000, which is the same as turning the capital over once in about two and a half years. After watching the business for a year, the Directors are not yet able to say whether their mistortunes are due to temporary troubles, or whether the circumstances are such as to prevent the manufacture of iron at a profit in the company's works. The fact is clearly developed, that no iron business can be successfully managed by a Board of Directors whose office is two hundred miles from the works. We have long been convinced that the failure of so many American mines, held abroad, lies in a precisely similar state of affairs. Boards of management have rarely proved themselves efficient, either in war or business, and when they are made up of men drawn from other walks of life than that in which they are trying to act as leaders, and supervise operations of a kind they have perhaps never witnessed, carried on in a country they have never visited, the absurdity of the system is at once apparent. A great deal of valuable American property has been actually destroyed by the mismanagement of men who consented to direct operations of which they knew little, in a country of which they seem to know less. The result is always some very hard words about America and Americans; but the fact is, that the mishaps of English owners are due to their implicit faith in absentee management.

We have no need to bring forward mines by name to sustain the views here expressed, but will do so in one case, for the reason that one of the favorite American mines has lately declined sadly in English opinion. We mean the Flagstaff, in Utah, the praises of which formed for months an unbroken refrain in foreign journals of the best class. The following extract from the weekly reports of the *Mining World* for December 6, will show how this mine has fallen from its high estate:—

"Every variety of rumor is afloat regarding Flagstaff, Last Chance, and Tecoma. From one reliable source of information—we are far from meaning the offices of the companies—we learn that the Flagstaff mine has been idle for some six weeks, that 'furnaces have been abandoned, and the stock of fuel removed to the Last Chance furnaces, which are smelting Flagstaff ore. When the Last Chance Company is paid for this service the manager intends to apply the proceeds towards the development of the Last Chance mine, pending which little or nothing is being done. It is stated that the Flagstaff has been seized by order of its creditors. We have also heard that Capt. FORBES has seized the mine for a debt of 5,000*l*. One thing at least is clear. The directors, if they did their duty, would silence all false rumors and statements by simply publishing the news they receive, instead of studiously keeping it private. We are strongly of opinion that the shareholders of the companies have a good case against the directors and promoters for the restitution of the large amount of capital they have been induced to subscribe by the representations contained in the prospectuses, which have turned out fallacies."

Were we to print every word which has been published concerning this and many other mines for the last half year, it would be plainly apparent to our readers that the evils of absentee management are fully understood in some quarters, at least, for in nearly every report we find the Boards of Directors referred to as the great stumbling-block in the way of intelligent investment in mines.

One of the evils in mining investment, developed by the modern modes of communication, is the facility for speculation and official misconduct which the Ocean telegraphs afford. Dividends are declared upon Cable reports, though the Directors are often forced to acknowledge they do not understand them. Companies are not willing to declare in January a dividend upon the results of November's work, but the 2nd of January must see the money earned in December, by an establishment 5,000 miles distant, distributed to the shareholders. Even this system, bad as it is, might be possible, if the dividends were kept down to a safe figure. But, instead of this they are forced to the highest limit the business will bear when it is most prosperous, and the ordinary fluctuations of even a good business—the rainy days of trade life—throw the Directors into difficulties at once. These difficulties are concealed as long as possible, but usually at the sacrifice of really valuable interests, and when publicity comes it is too often the exposure of misconduct that should be sharply reproved.

These evils call for a remedy to be applied—in London, and not in America. We have long hoped that the strong business sense of the English people would lead the honest promoters—and there are such—of mining enterprises to place their next project under such good management as should place the London end of the line above censure. Were this done, we can assure our friends that there would be less to find fault with here.

CORRESPONDENCE.

Steam on the Canals.

HARRISBURG, Pa., December 22, 1873.

TO THE EDITOR—Sir: Allow me, through your valuable journal, to suggest a practical way to improve the New York canals, and adapt them for the use of steam. It is not probable that any considerable improvement can be made in the model of steamboats, or in the character of engines and boilers. The upright direct-acting engines, with properly constructed boilers, are no doubt the best suited for the purpose of propelling boats. Greater economy in the use of fuel is, of course, an important desideratum. It is quite evident that the experiments thus far made have been generally in the wrong direction. The cart has all the while been placed before the horse. The canals must first be adapted for the use of steam. This is not so difficult a task as might at first be imagined. The lockes only require to be enlarged to proper dimensions. On the Erie Canal, from Albany to Buffalo, there are seventy-one locks, 18 by 100 feet. To enlarge these locks to four times their present capacity, or 36 by 220 feet, would cost less than three million dollars. Locks thus enlarged would admit the passage of a steamboat carying a cargo, with a train of three barges in tow. With such a fleet, from seven to eight hundred tons of cargo could be transported at each trip. It is not necessary to go into detailed calculations to show that on a canal thus improved, *steam will pay*. The fleet of four boats would pass the locks at a single lockage, requiring but very little more time than is now consumed in locking a single boat. The advantage to be gained by the improvement proposed may readily be seen; and there is no practical difficulty in the way of its immediate adoption.

A. J. WHITNEY,
Resident engineer, Pennsylvania Canal.

Atmospheric Decomposition of Rocks.

SCRANTON, December 20, 1873.

TO THE EDITOR—SIR: My attention was attracted by an article in the ENGINEERING AND MINING JOURNAL of Nov. 18th, regarding Dr. T. STERRY HUNT's paper, read at the meeting of the Boston Society of Natural History, concerning the decomposition of certain rocks to a great depth from the surface, which he observed near Lynchburg, Va. The facts he states are most interesting, and few persons have had an idea that rocks can be decomposed to a depth of 50 or even 100 feet by the action of the atmosphere and of rain.

I have seen an example of this kind lately in digging for coal. The place was a plateau on the top of a mountain near Scranton. The lowest workable bed of the coal-field crops out here, being entirely isolated from the rest of the field, owing to denudation of the surface, which has formed a valley separating it from the main body of the seam with which it was formerly continuous. It runs through the top of the mountain, underlying a tract in width, perhaps, half a mile. Where there is a sufficient covering of rock to protect it from the weather, the bed exists in a good workable condition, having a thickness of six feet; but at one place where it approaches the surface to within four or five feet, many pits dug at different points showed that the bed had been decomposed, the slates overlying it, as well as the coal itself, having been converted into a tough clay called "hard pan," and the former position of the coal bed being distinctly visible from the great amount of coal in the shape of dust and lumps in a situation corresponding to that of the undecomposed part of the bed. About one-half is coal and one-half clay.

The pits were sunk to from 10 to 14 feet, in most places without finding rock, and the coal corresponding in position with that of the other beds of the basin shows that since the arrangement of the strata in their present position throughout the valley there had been no local movement in this particular place which might have favored the deposition of the clay by water. The sides of the mountain, on the top of which the previously described coal is found, consist of bare and hard sandstones; and everything seems to prove that the weather must have disintegrated the materials forming the thick bed of clay; but it must have been subsequent to the carboniferous era to which Dr. HUNT attributes the action in the case of the Virginia clay. Glacial action is apparent in many places around the base of the mountain on which the previously described effects are observed.

D. C.

Does Iron Improve with Working?

THE question, "Does iron improve with working?" has had many theories in the affirmative, with little or nothing against it. We think it can be shown that iron can be overworked while in process of manufacture, or, at least, between much heating and much working it can be overdone, especially by the former. The reheating of iron lessens the amount of cinder contained in it. Simply and plainly, this is best proven by the use of old furnace tools, old grate bars, and much other old scrap iron that has been subjected to alternate heating and cooling, which, when fagoted and rolled, produces an iron of inferior quality. Next, it can be shown by the rolling of piles, or blooms, that have been kept in the furnace an undue length of time, till the cinder having been consumed--"dried up," as the expression is—will be shown in the rolling to have become stiff, unpliable, and liable to crack, if the shape that it is worked into is very thin, or of irregular form, such as an angle iron, T iron, etc. Iron is overworked when it ceases to work soft and easy from the liquid cinder that it should contain. Some iron possesses more cinder than others, and that iron which has much cinder can be worked with advantage to its quality, as long as the cinder holds out; to this extent it can be improved by working, but to the point at which a lack of cinder makes it work stiffly and dryly, it will no longer improve by working.

The extent to which iron should be worked should have reference to its uses. If the iron be worked till all the cinder is excluded, and just then is at its maximum of quality, then it would be unfit for any further manipulation in the hands of the user who might require to further heat and work it to his purpose; for its maximum having been attained by heating and working until the cinder is out, it but deteriorates by any further heating and working. The more work that it takes to exclude the cinder, the more will it improve by this work, but it has reached its highest capability of improvement when this is attained. Some iron, then, is at its best by one heating and rolling, while other iron is the better of a second heating and rolling. Some will improve to the third heating and rolling, but of common iron not much of it is of this character. This is in regard to puddled iron, but the same principle applies or governs the question as to charcoal iron. The latter, being more homogeneous, will endure more work; but the highest point of improvement with it is also reached, when, by re-heating and re-rolling, it has ceased to work soft and readily in the rolls. This is a simple and practical answer to the question of how far iron is capable of being improved by working. In the rolling of odd shapes, if the iron be kept in the heating furnace a much longer time than is necessary to properly heat it, as sometimes happens through accident or delay, the iron in rolling will not so readily form itfelf into sharp corners and fine angles, is liable to crack if worked into beveled edges, and is afterwards found to have suffered actual deterioration in quality of fiber.—*Rolling Mill Information.*

Our Imports from England.

THE Chief of the Bureau of Statistics publishes the following statement of our imports from Great Britain in the eleven months ending November 30, 1873; comparing them with the same time in 1872:

Articles.	1872.	1873.
Cotton manufactures, piece goods, yards	126,458,883	104,278,043
Iron, pig, tons	185,846	99,098
Iron, bar, angle, bolt, and rod, tons	62,357	22,689
Iron, railroad of all sorts, tons	441,074	177,955
Iron, hoops, sheet, boiler and armor plates	29,829	17,988
Lead, pig, rolled, sheet, piping and tubing	7,590	2,635
Linen manufactures, piece goods, yards	114,472,000	97,400,679
Silk manufactures, broad stuffs of silk or satin value	$145,249	$74,570
Ribbons of all kinds	$60,530	$50,593
Other articles of silk only	$92,010	$80,836
Other articles of silk and other materials	$193,022	$76,989
Wool, sheep and lamb, pounds	2,199,111	819,081
Wool cloths, or wool mixed with other materials, yards	5,886,748	4,663,017
Worsted stuffs of all wool or wool mixed with other materials, yards	91,232,901	83,185,177
Carpets, yards	6,656,434	4,964,681

THE *Mining World* of December 6 says that the shares of most manufacturing companies had been singularly affected during the last few weeks. Sheepbridge Coal and Iron fell from 74 prem. to 40 prem.; John Brown & Co. from 30 prem. to 4 prem.; Cammell's from 6 prem. to 7 dis.; and the stable Staveleys—the best investment in Yorkshire—have also looked downward. There has since been an appreciable recovery.

MINING pumps have of late been successfully protected against the corroding influence of acid mine-waters by coating the pipes with enamel and covering this with lithoid-mass. The latter covering costs in Germany, according to the *Deutsche Industrie Zeitung*, 3½ Sgr., about 8½ cents coin per square meter.

MINING SUMMARY.

Nevada.

Correspondence of the White Pine *News*.

EGAN CANYON, CHERRY CREEK, RUBY HILL AND ROBINSON.

WORK has been recommenced on the property of the San José Mining and Milling Company at this place. The Superintendent, Mr. LEACH, was engaged in placing two pumps in position to dry out the Gilligan mine, which is the principal mine of the company. This mine had been sunk to a depth of nearly 600 feet, some eighteen months past, when owing to the inadequacy of the pump then in use, and an unusual flow of water, the work had to be discontinued, to await increased pump capacity. The work now in progress was being done under the immediate supervision of the managing director of the company, M. J. O'CONNOR, of San Francisco, assisted by General ROSECRANS, as consulting and advising engineer. These gentlemen have come to Egan determined to pump the once famous Gilligan mine dry, and see for themselves what prospects and promise of a paying mine are to be found in the lowest developments thereof. There is no doubt but what, under the management of these gentlemen, with the remarkably fine prospects, not to say the grand results, which the Gilligan has at all times given, and yielded through the little 5-stamp mill in days of yore, it will soon again be contributing very largely to the bullion product of Eastern Nevada. Arrangements are being made to have the 20-stamp mill at this place started up on or about December 15th next, on ores from the mines of Cherry Creek district. The 5-stamp mill at the Rye Patch company at the mouth of Egan canyon, is running constantly on ore from the Exchequer mine, Cherry Creek, which the company purchased in August last. The gross yield per day was $1000.

CHERRY CREEK.

The general out-look of this camp is good. The prospects are extensive, so far as surface indications go, and a very large amount of money is evidently in view. The development of the district is indeed insignificant, and affords no opportunity of forming any opinion as to permanence or continuity. Judging from surface indications the pay metal will be found in bonanzas, or chimneys, at intervals along the course of two very extensive quartzite belts which run northeast and southwest across the east face of the mountains, accompanying which, on its upper underlay, the precious metals of silver and gold are found in regular quartz gangue. Outside these two zones or belts of quartzite, no appreciable amount of pay metal has thus far been found. The extent them, lineally, is about eight miles, and their dip westerly, or into the mountain. The mines so far opened and from which several lots of high grade ore have been extracted, much of which has been sent to Eureka for reduction, are the Geneva, Teacup, Wanderer, Pine Nut, Gray Eagle, Bettie, Chance, Victoria, Flagstaff, Star and Silver Glance. The ores of these mines, as sampled in the large way and not from specimens, give in silver from $100 to $480 per ton, and in gold, from traces, to $20 per ton. The ores of the district are of the stromeyerite, or silver copper glance class, and are susceptible of, being reduced to at least 75 per cent. by the unroasted process or free amalgamation, but should be crushed dry, for reasons well known to all practical mill men. I am of the opinion that 80 per cent. of these ores can be obtained by raw working. There is already quite a lively little town built up on the creek from which the district and town are named, distant from the mines four to six miles. There is a good lodging house or two, stores and restaurants, with a few saloons not more, I think than a dozen, and an A 1 livery stable, kept by MARTIN & MCPHERSON, where visitors can be accommodated with all manner of conveyances, whether to visit the mines, or take a drive for pleasure to the hot springs adjacent.

RUBY HILL.

I paid a business visit to this place, and found that certain of the mines were indeed possessed of merit. After making examination of such as it was my duty to investigate, the first thing that struck me was the fact of these mines lying idle. Here I found prospects, which if situated in any of the innumerable districts it has been my lot to pass through, would be in the hands of men more inclined to work than to litigate such valuable property. On inquiry, I found the company were at loggerheads and in law with the vendor, while the poor men who worked for them in the mines were still unpaid, and many others, who rendered services of various kinds, had sued and attached the property; yet "chloriders" were digging out the ore, hauling it to Eureka, a distance of some 130 miles, and when they got their samples assayed and settlements made at the Richmonnd works, found the ore had gone from $900 to $1,500 per ton. Had the prospect I speak of been limited, and but little ore in sight, I should not have noticed it thus, but I must say it is very extensive, and shows a large amount of money in sight. Is is only one more of the many really good prospects of the country frittered away by bad management.

ROBINSON TUNNEL.

As my stay was but brief, so shall my notes be also, for the present, intending, as I do, to do this camp justice, by a more thorough study of its prospects, which on first sight, have very much excited me, from the immense amount of ore to be met with on every side, as one traverses the mineral belt of this wonderful district. I, however, in course of my travels, accompanied by Messrs. CRANLEY, CAHILL and GLEASON, during a tour of six hours' duration, had an ample opportunity of forming some opinion of the district. After visiting the Hayes mine, as well under as over ground, the Kate Hayes, Hicks, Cliff, Badlam, George Lamb, Emmet and Northfolk mines, I had a pretty good opportunity to form a general opinion of the prevailing characteristics of the camp. The general out-look of these properties, with the result of the samples I had taken and tested from all the mines visited, gives sufficient assurance of the merits of Robinson District, to enable me to say that it will do to stick to, if properly handled. The ores, I find to be in value of precious metals, from $45 to $75 per ton, giving an average of $60; this applies to a certain grade of ore, of which there are tons of thousands of tons, and, which, like the ores of the great Comstock, must be treated in large mills, and at the minimum cost of reduction; but, unlike the Comstock, the ores of the Robinson must be crushed dry instead of wet, a difference I will yet explain. Let friend ELMORE crush dry, increase his stamps from ten to twenty, or forty, and Robinson is all right. The real good smelting ores of Robinson are few, and smelting, except to a limited extent, must ever be a failure there. But let me say, or rather suggest, that I think the Maker of the Universe placed all those silver and gold-bearing iron ores in Robinson, simply to have them hauled to White Pine as a flux for the refractory ores of the latter district, which are without limit there. Samples of gold and silver bearing ore from Robinson, with $45 to $80 per ton of these metals, gave me from 35 to 50 per cent. of oxide of iron. This is the identica flux your unbounded resources of White Pine base metal ores in silicious gangue, require to flux them; get a proper and profitable separation of the base and precious metals, and make White Plain what it should be, what it will be when taken upon this basis. Bring Robinson iron ore of 40 per cent., and $40 gold and silver, per ton, to White Pine, and mix one ton to four of your base ores and they will smelt like metallic lead. The great want of White Pine has been the deficiency of iron in the base ores, while the great success of Eureka has been in the excess of iron contained in her lead ores proper.

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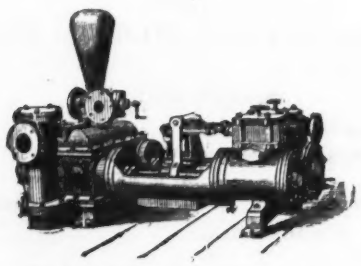

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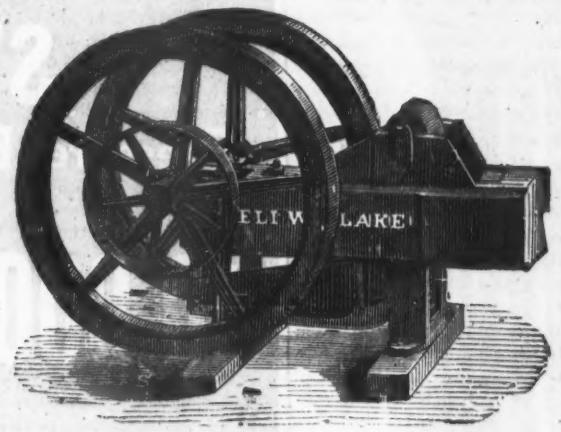

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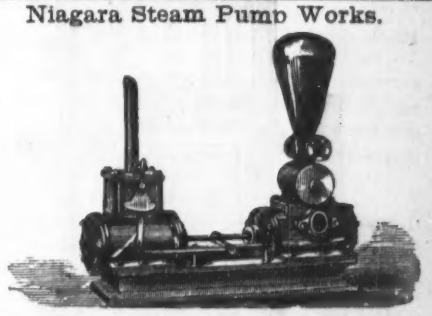

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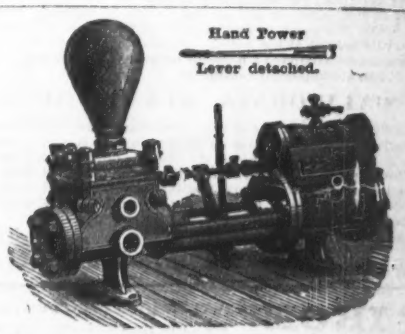

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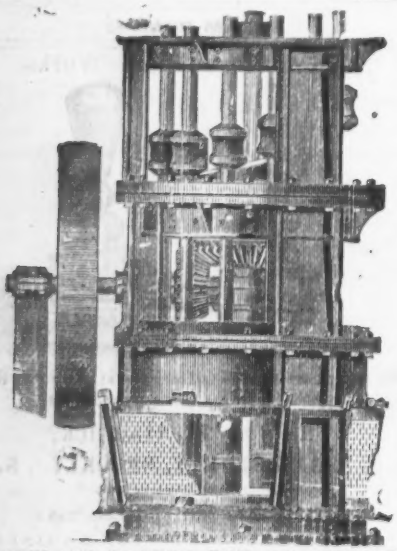

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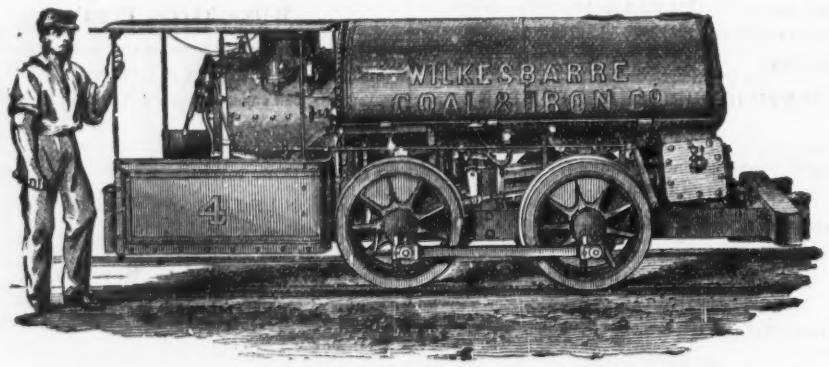

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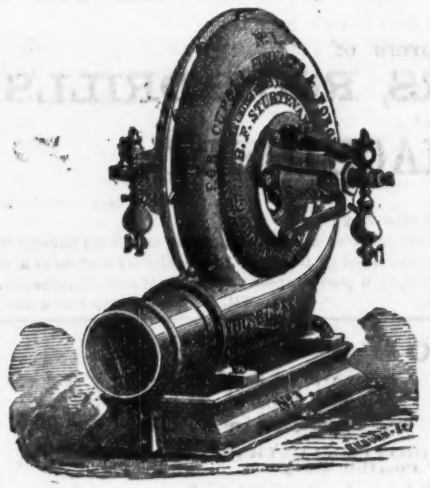

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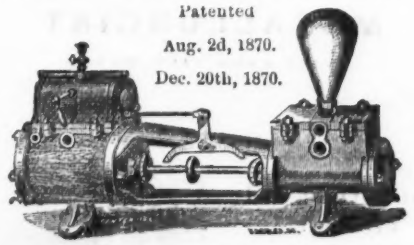

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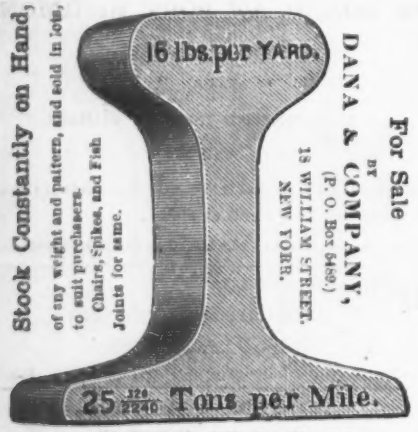
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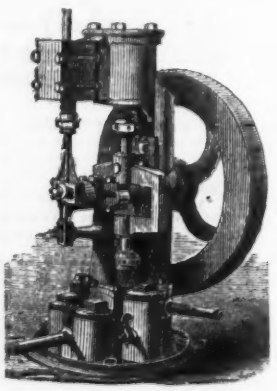
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